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CLASSIFICATION [redacted]

CENTRAL INTELLIGENCE AGENCY

REPORT [redacted]

INFORMATION REPORT

CD NO. 25X1

COUNTRY	East Germany/China
SUBJECT	East German Order for Construction of a Transformer Plant near Peking
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SUPPLEMENT TO REPORT NO.	25X1

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THIS IS UNEVALUATED INFORMATION

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1. [redacted] Viktor Dunkel, of VEB Transformatoren- und Roentgen- 25X1
werk (TRARO) Dresden, visited China at the order of the East German Ministry for Foreign Trade.[1] Dunkel received an order from the Chinese Government to design a transformer plant. The work was to be carried out by VEB Industrie-Entwurf Dresden and by the East German machine construction industry, under the direction of TRARO. [redacted], Dunkel again visited China for the purpose 25X1
of discussing the technical details of the project with Chinese engineers. At that time, work on clearing the ground for the new plant had begun. 25X1

2. [redacted] the Chinese Minister of Trade visited TRARO and inspected models of transformer plant equipment. At that time, a provisional contract for equipment was placed with TRARO. Equipment for the new Chinese plant was ordered under the provisions [redacted] East German-Chinese Trade Agreement and was to be delivered [redacted]. The new plant was to go into operation [redacted] 25X1
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3. The new transformer plant is located about 20 kilometers west of Peking on a river port, which will be used for the delivery and transportation of materials. A rail line also serves the plant. Dunkel stated that a new industrial complex is to be built up in this area and that several unidentified factories were under construction when he was there. One of the fac- [redacted] to be a machine-tool plant which will produce lathes, and [redacted]

4. The new transformer plant is to be about twice the size of TRARO-Dresden. It will differ technologically from TRARO in that it will engage chiefly in series production and will construct individual machines only in exceptional cases. China will continue to import special technical transformers. The new Chinese plant is designed to produce the following types of transformers:

a. Mains Transformers
Power from 20 to 1,600 KVA; high-tension voltages up to 40 KV; the transformers are to be oil-cooled and will use three-phase current. Fifteen units are to be produced per day. Series production is to be divided into two parts: Transformers with 20 to 500 KVA and transformers with 800 to 1,600 KVA.

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1) Transformers, 20 to 500 KVA:
These transformers will be produced on the basis of production blueprints wh[redacted]cording to DIN 42531. They can be se[redacted]There are to be three different types, ca[redacted]with high-tension voltage of 6,000 and 10,000 V; one with high-tension voltage of 15,000 and 20,000 V; and one with a high-tension voltage of 30,000 V. Low-tension voltages for the transformers are to amount to 231 V, 400 V, or 525 V, as desired. Each of the three types can be manufactured with 20 KVA, 30 KVA, 50 KVA, 75 KVA, 100 KVA, 125 KVA, 160 KVA, 200 KVA, 250 KVA, 315 KVA, 400 KVA, or 500 KVA. The weight of a 20 KVA transformer with oil self-cooling amounts to 300 kilograms of which 105 kilograms is oil weight. The weight of a 500 KVA transformer amounts to 2,145 kilograms, of which 560 kilograms is oil weight.

2) Transformers, 800 - 1,600 KVA:
These transformers will be constructed on the [redacted] were standardized in Germany. They can be set [redacted] open. This series has changes only in low-ten[redacted] tp 400 V, 525 V, 3,150 V, and 6,300 V. The weight of an 800 KVA transformer amounts to 3,250 kilograms, of which 960 kilograms is oil weight. The weight of a 1,600 KVA transformer amounts to 5,490 kilograms, of which 1,370 kilograms is oil weight.

b. Power Transformers (Leistungstrafos) 2,500 KVA - 6,300 KVA. Two transformers are to be produced daily. The transformers weigh 10 to 20 metric tons. Oberspannungen for the transformers are as follows: 6 KV, 10 KV, 15 KV, 20 KV, and 30 KV. Unterspannung ranges from 3,150 to 10,000 V. The transformers are to [redacted]etting up outside and are to be equipped wi[redacted]ith pipes 44.5 mm. in diameter, and wa[redacted]r auxiliary air cooling. It is alleged that production of these transformers will be based on Soviet blueprints and construction will be carried out according to GOST norms.

c. Transformers with 6,300 to 20,000 KVA for high-tension voltages of 30, 60, and 110 KV. These are to be equipped as power transformers with regulating switches (Regelschaltwerke) in the main regulating ranges from 15 to 21 stages (Stufen). The transformers are to be produced on the basis of plans drawn up for TRARO [redacted] These plans have been improved in recent months. The transformers are to weigh between 25 and about 60 metric tons. Blueprints for the construction of the transformers were to be turned over to China [redacted] The new Chinese plant is scheduled to produce from 100 to 120 such transformers per year. 25X1

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d. The new Chinese plant will also have a special department capable of constructing transformers for use as power transformers up to 40 MVA for 110 and 220 KV. About 40 to 50 such transformers are to be constructed per year. Plans for the transformers are to be supplied by the USSR.

5. All test field equipment for the new Chinese plant, as well as all equipment for the proving ground, is to be built and delivered by TRARO. The test field will consist chiefly of an impulse potential testing installation (Stossspannungs-anlage), which TRARO is constructing and will deliver [redacted] 25X1
The test field will also have intermediate testing grounds (Zwischenpruefplaetze) where the transformers will be tested for disruptions (Unterbrechungen) and short circuits; the transformers will be shut off while these tests are being made. The impulse potential testing installation will be constructed for voltages up to 2.25 million V maximum when grounded (gegen Erde). It is to be built in accordance with the Marx arrangement for voltage multiplication, according to which the charging voltage is doubled as follows: a battery of 16 condensers is divided up into eight pairs of condensers which are jointly charged through water resistances (Wasserwiderstaende). By switching the eight pairs together, one behind the other, (hintereinanderschalten) with the aid of switch spark gaps (Schaltfunkenstrecken), an impulse potential of 2.25 million V maximum is attained.

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Sphere gaps (Kugelfunkenstrecken) for measuring voltage are to be delivered along with the installation. These sphere gaps are arranged in such a way that the larger one, which has spheres (Kugeln) of about 1,500 mm. in diameter, rests directly on top of the impulse potential installation, while the smaller one, which has spheres of about 1,000 mm. in diameter, is placed between the high-frequency installation and the test transformer. The smaller sphere gap can be used for either the high-frequency installation or the test transformer, but it cannot be used for both at the same time. It is possible that at a later date the installation will be expanded so that the set of test transformers will have its own sphere gap, the diameter of which will amount to 2,000 mm. To make possible a high number of tests and experiments, three sets of these machines are planned; they will have a capacity of 50 Hz, 100 Hz, and 150 Hz. They are to be built by VEB ELMO-Werk, Dessau. The set of [redacted] for 50 Hz can be used for tests up to 166,000 V when power is 30 KVA [redacted] pacities of the other two sets of machines are considerably higher, co[redacted]ng to the power necessary for testing large transformers.

6. The Chinese plant is to be [redacted] brick walls. The windows will be of cast [redacted] All the foundations are to be of reinforced concrete and about twice as thick as ordinary foundations. This is necessary because of the sandy ground on which the plant is being constructed. The plant will not have its own power plant. However, it will be equipped with its own heating plant, which is to supply the heat necessary for drying, for the vacuum process, and for heating the buildings in winter.

7. The following auxiliary factories are to be included in the transformer plant complex: workshops for producing hard paper (Hartpapier) plates, hard paper cylinders, transformer casings and other sheet-metal parts; stamping shop (Stanzerei); joinery; milling machine shop; etc. (see annexed sketch).

8. In carrying out the designing of the Chinese plant, VEB Industrie-Entwurf Dresden and TRARO Dresden called in the following factories, most of which received orders to deliver specific equipment to China for the plant [redacted] 25X1

Plant	Equipment to be Delivered
VEB Industrie-Entwurf Dresden	Planning of construction and construction steel projects; statistical calculations
VEB TRARO-Dresden	Technology
VEB LEW Hans Beimler, Hennigsdorf	Special machines for the winding shop (Wickelei) and for the production of hard paper cylinders (the latter in conjunction with VEB Radebeuler Maschinen-Fabrik); [redacted] (the latter in conjunction with VEB [redacted] for the oil-cooling installation
[redacted]	Vacuum drying ovens and drying installations
VEB EKM Pumpenfabrik, Halle	Vacuum pumps
VEB Bleichert, Leipzig	Crane installations and other lifting equipment

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[redacted] Crane installations and other lifting equipment

[redacted] (private firm) Stationary paper spinning machines (liegende Papierumspinnmaschinen) with 12 spinning heads, for spinning profile copper

[redacted] Electric cable lines, traveling crabs (Laufkatzen) and smaller assembly lifting devices

[redacted] Cable and cable fittings for installation and assembly

[redacted] Test field equipment and transformer stations

[redacted] Oil bearings

[redacted] Switch devices (Schaltanlagen)

[redacted] Lacquer-spraying equipment; suction devices (Absaugungsvorrichtungen)

[redacted] Hot-air heaters

1. [redacted] Comment: [redacted] was formerly Chief of Planning (Projektierung) at [redacted] with the title of Chief Designer (Konstrukteur). 25X1

2. [redacted] Comment: [redacted] VEB Transformatorenwerk Oberschoeneweide (TRO) [redacted] five 100 to 125 MVA transformers with 220 KV to the [redacted]. [redacted] of these broke down and were returned to VEB TRO for repair; [redacted] of the transformers are still there. 25X1

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Oberspannungen = high-tension voltage.

Unterspannungen = low-tension voltage.

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LEGEND TO SKETCH

1. Administration building, technical directorate and designing (Konstruktion) offices; five stories high; of brick construction; archives and blueprint registry are in the cellar; the blueprint shop is specially ventilated.

2. Administration building, commercial administration, bookkeeping and personnel administration; five stories high; of brick construction; records storage rooms for storing records of all plant personnel are located in the cellar.

3. Production of housings and covers for individual transformers; production of pipe and sheet-metal radiators; production of plate housings for control desks; manufacture of oil conservers (Oelkonservatoren); production of housings for switches and converters (Wandler).

4. Mechanical workshops; production of stamped parts; production of machined parts; cold shaping; deep-drawing presses; core sheet stamps (Kernblechstanzen); screws, nuts, bolts, etc.

5. Transformer production, 20-1,600 KVA group and 2,500-6,300 KVA group; the center wing is the assembly hall, where production is carried out according to the technological principles in the construction tempo procedure (Aufbautaktverfahren); the center wi[redacted] crane runway f[redacted] crane runway, [redacted] cranes with a capacity of 7.5 metric tons; two cranes run on each crane runway.

   5a. Winding shop.
   5b. Cover assembly.
   5c. Test field.
   5d. Six vacuum drying ovens.
   5e. Final control; lacquer-spraying shop; final assembly; packing shop; etc.
   5f. Same as 5e.
   The entire building is connected with railway nets by means of a turntable.

6. Large transformer production of production gro[redacted]A-25 MVA and 25 MVA-40 MVA; experimental production; this building [redacted]s two crane runways, one above the other. One of the loading crane[redacted]city of 60 metric tons, the other a capacity of 100 metric tons. The assembly cranes have capacities of 15 and 20 metric tons.

   6a. Large winding shop.
   6b. Cover assembly; assembly of switches and porcelain insulators (Porzellane).
   6c. Test Field (50 Hz, 100 Hz, 150 Hz machines are located here).
   6d. Vacuum-drying installations with six large ovens.
   6e. High-tension test field (for equipment see report).
   6f. and 6g. Fi[redacted]acquer-spraying shop; control; shipment. This building i[redacted]ected to the rail net by means of a turntable.

7. Production of hard paper cylinders, hard paper plates, and hard paper shaped parts; workshop for processing hard paper and prepari[redacted]ording to blueprints. The workshops are equipped with speci[redacted]allations because the phenol resin used in the process is injur[redacted]n installation for reclaiming alcohol is located here. The building has a cellar for storing manila and cable insulation paper at a certain prescribed humidity.

8 & 9. Technical experiments are carried out here. Material-testing laboratories; carrying out of endurance tests.

10. Nursery for children of plant employees.

11. Dispensary (Ambulatorium) and polyclinic.

12. Transforming station for the installations in the plant. Power is supplied by a power plant which lies outside the plant grounds.

13. Heating plant containing three 4.5-ton steam boilers.

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LEGEND TO SKETCH
(Con'd)

A. 15-ton mobile travelling crane which juts out over the single-track rail line on struc[redacted] supports and makes rapid loading and unloading possible. Th[redacted]w the crane runway is paved with concrete and is used as an ope[redacted]ge point for raw materials. Shelves are set up for light materials, such as pipe.

B. Same as A, except that the crane has a capacity of 10 metric tons.

C & D. The turntables mentioned above.

E, F, & G. Harbor swinging cranes for l[redacted]nd unloading transport barges; E has a capacity of 100 metric tons [redacted] and G each have a capacity of 25 metric tons.

H. [redacted] Harbor.

J. Paved road for heavy plant traffic.

K. Hedge and grass separating nursery and dispensary [redacted] the factory proper.

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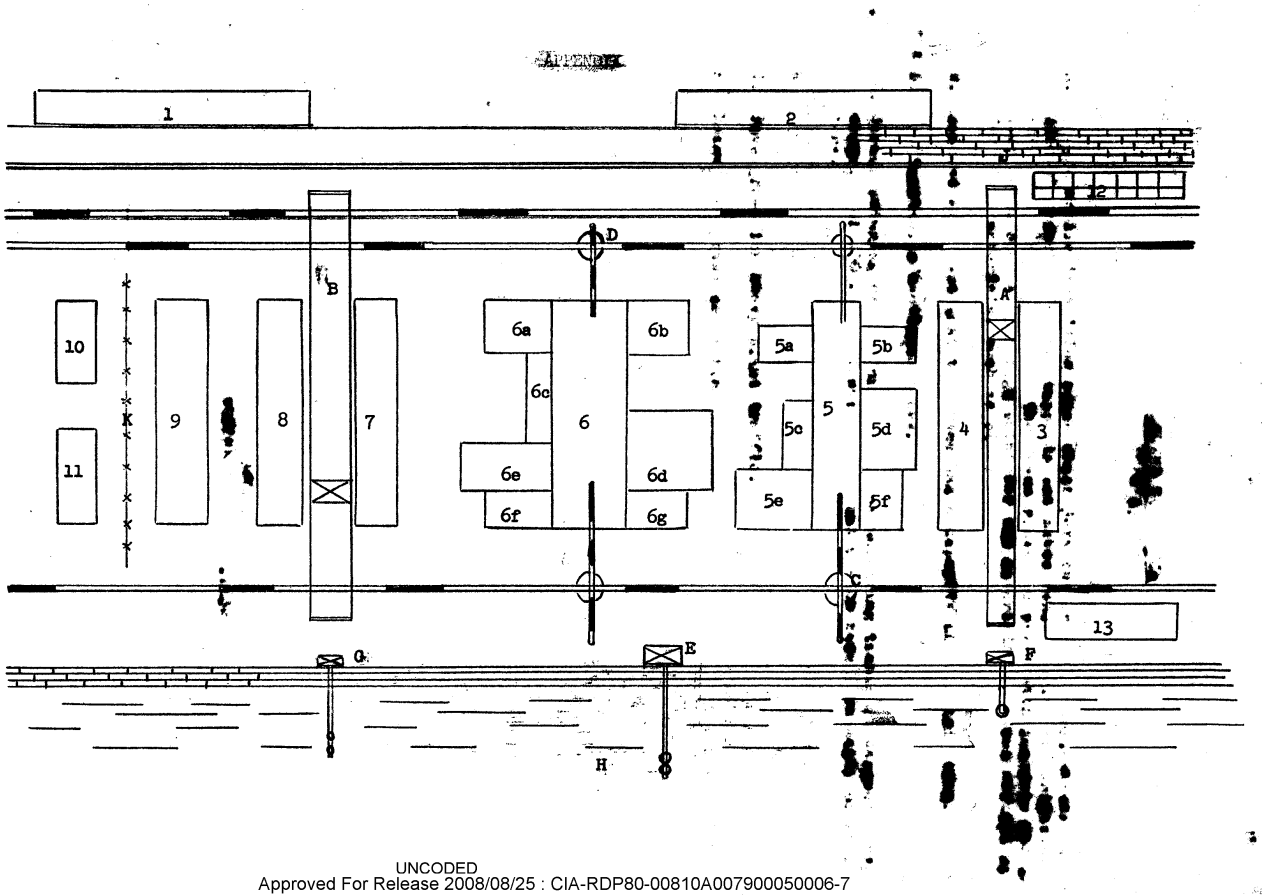
ANNEX

APPENDIX



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